FIG.1

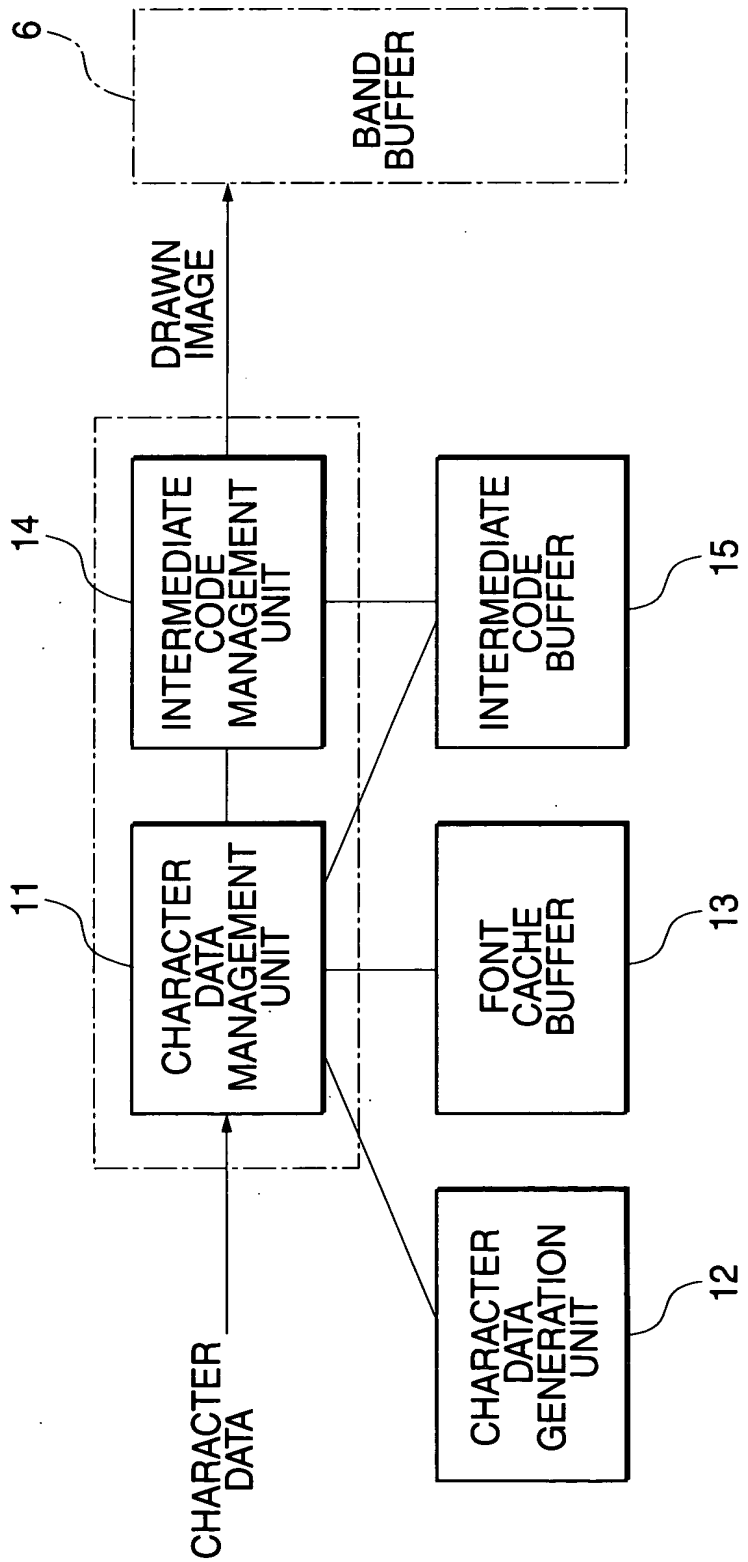

6
BAND BUFFER
DRAWN IMAGE
14
INTERMEDIATE CODE MANAGEMENT UNIT
INTERMEDIATE CODE BUFFER
15
11
CHARACTER DATA MANAGEMENT UNIT
FONT CACHE BUFFER
13
CHARACTER DATA GENERATION UNIT
12
CHARACTER DATA

FIG.2

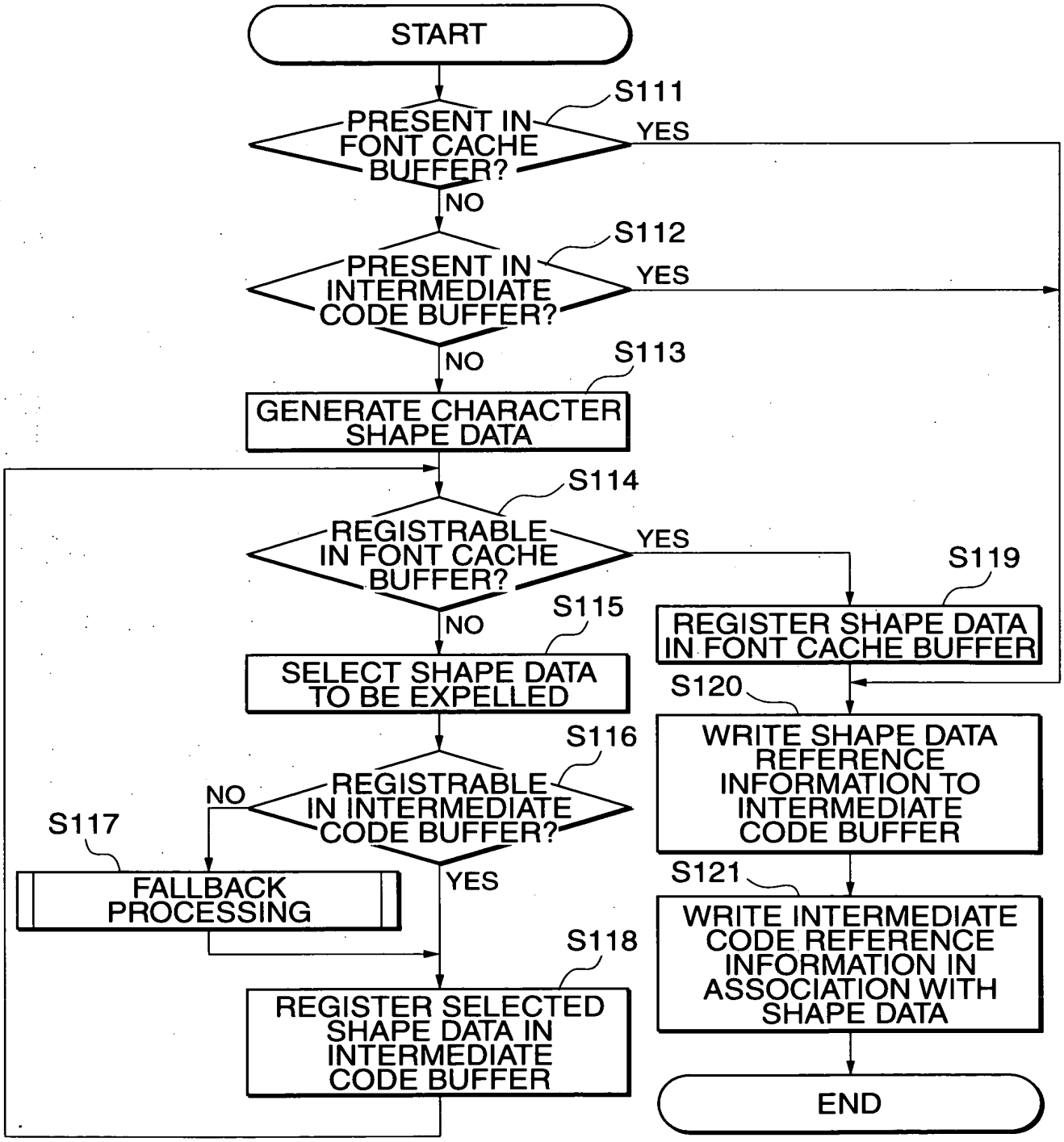

START
S111
PRESENT IN FONT CACHE BUFFER?
YES
NO
S112
PRESENT IN INTERMEDIATE CODE BUFFER?
YES
NO
S113
GENERATE CHARACTER SHAPE DATA
S114
REGISTRABLE IN FONT CACHE BUFFER?
YES
NO
S115
SELECT SHAPE DATA TO BE EXPELLED
S116
REGISTRABLE IN INTERMEDIATE CODE BUFFER?
NO
YES
S117
FALLBACK PROCESSING
S118
REGISTER SELECTED SHAPE DATA IN INTERMEDIATE CODE BUFFER
S119
REGISTER SHAPE DATA IN FONT CACHE BUFFER
S120
WRITE SHAPE DATA REFERENCE INFORMATION TO INTERMEDIATE CODE BUFFER
S121
WRITE INTERMEDIATE CODE REFERENCE INFORMATION IN ASSOCIATION WITH SHAPE DATA
END

FIG.3

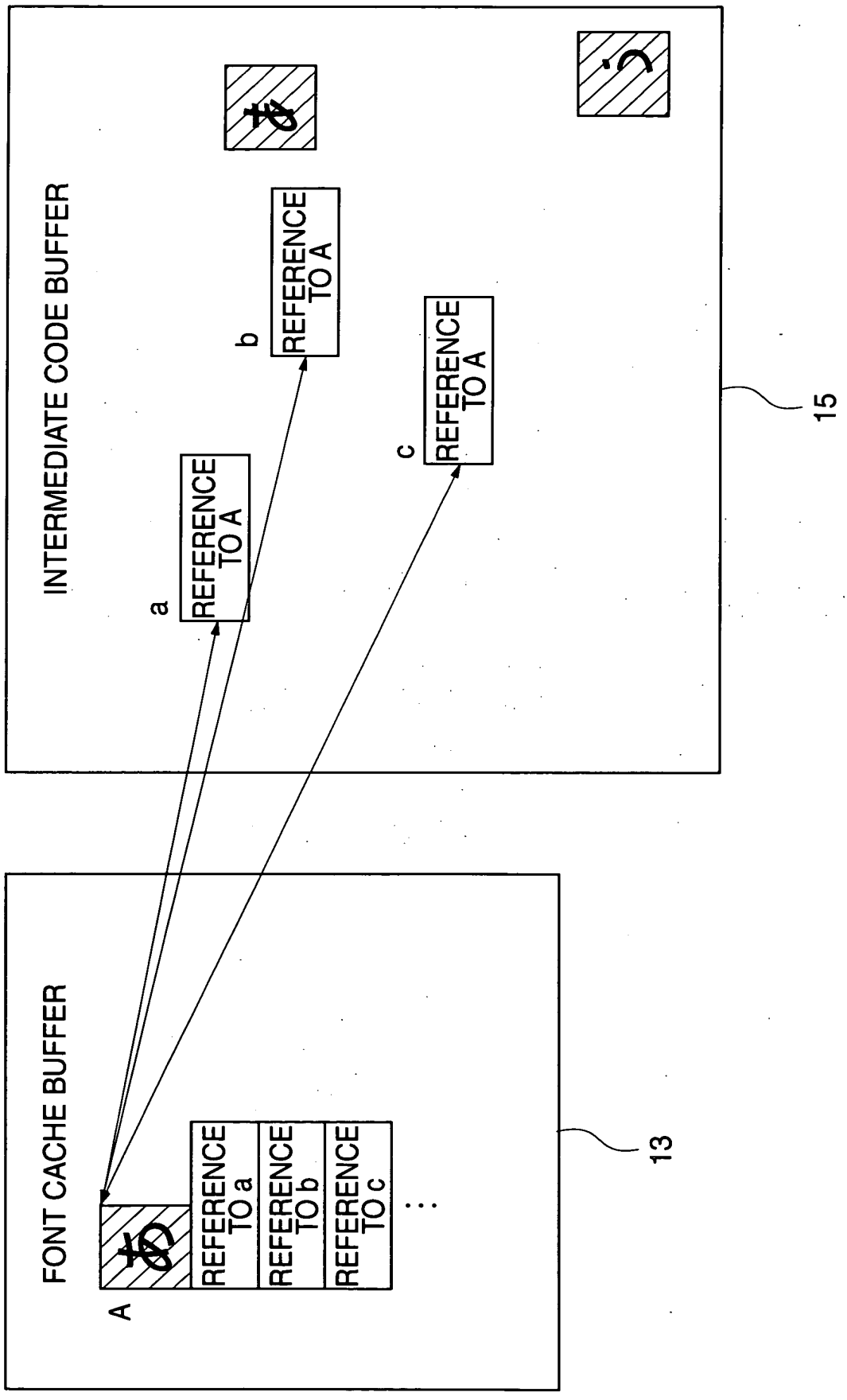

INTERMEDIATE CODE BUFFER
a
REFERENCE TO A
b
REFERENCE TO A
c
REFERENCE TO A
15
FONT CACHE BUFFER
A
REFERENCE TO a
REFERENCE TO b
REFERENCE TO c
13

FIG.4

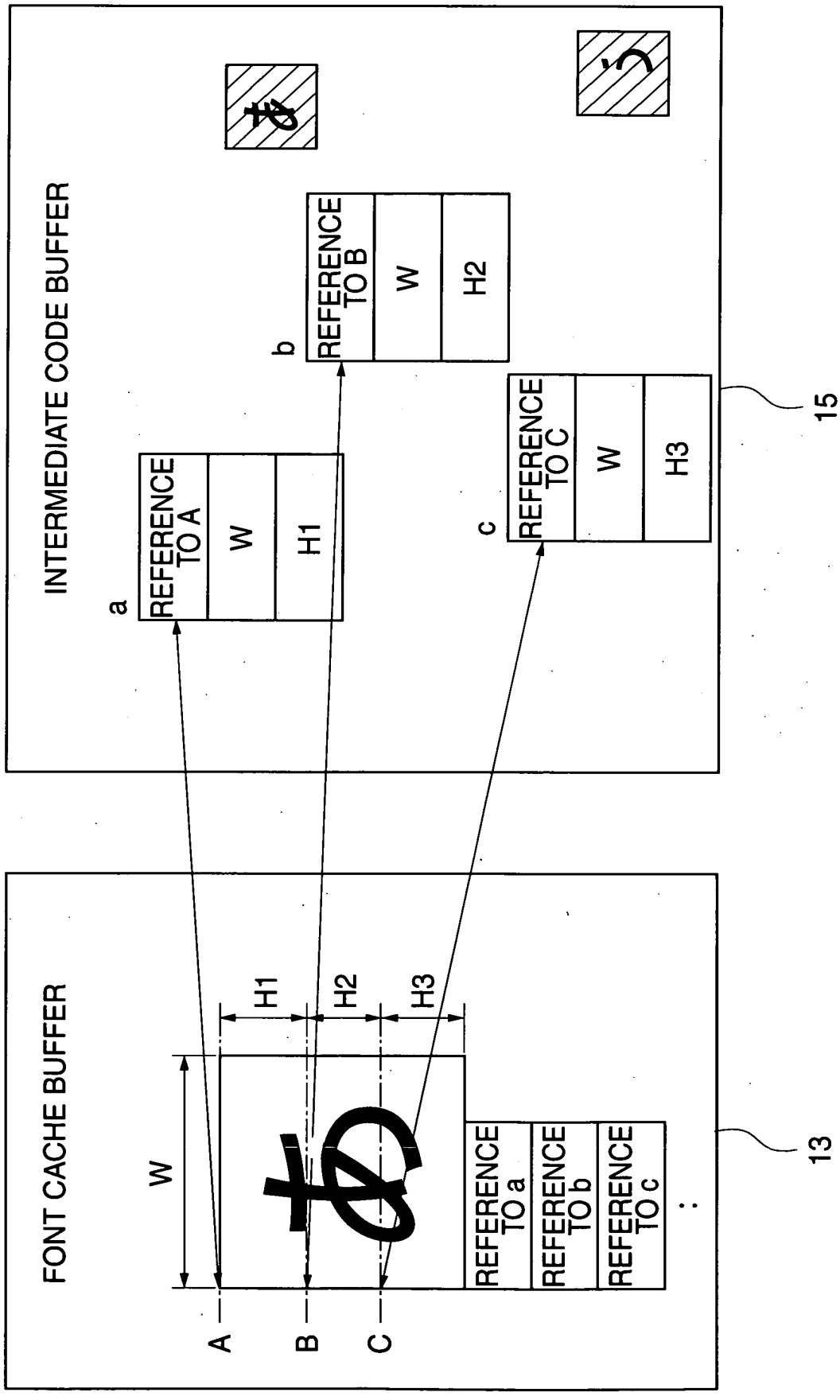
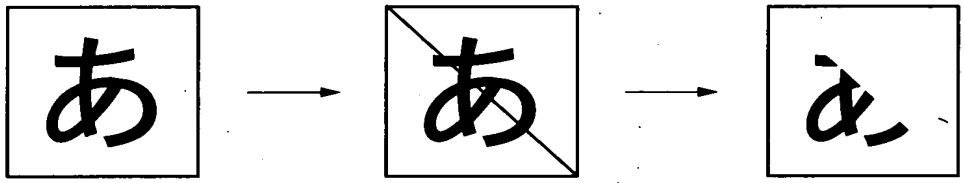

INTERMEDIATE CODE BUFFER
a
REFERENCE TO A
W
H1
b
REFERENCE TO B
W
H2
c
REFERENCE TO C
W
H3
15
FONT CACHE BUFFER
H1
H2
H3
W
A
B
C
REFERENCE TO a
REFERENCE TO b
REFERENCE TO c
13

FIG.5A *FIG.5B* *FIG.5C*



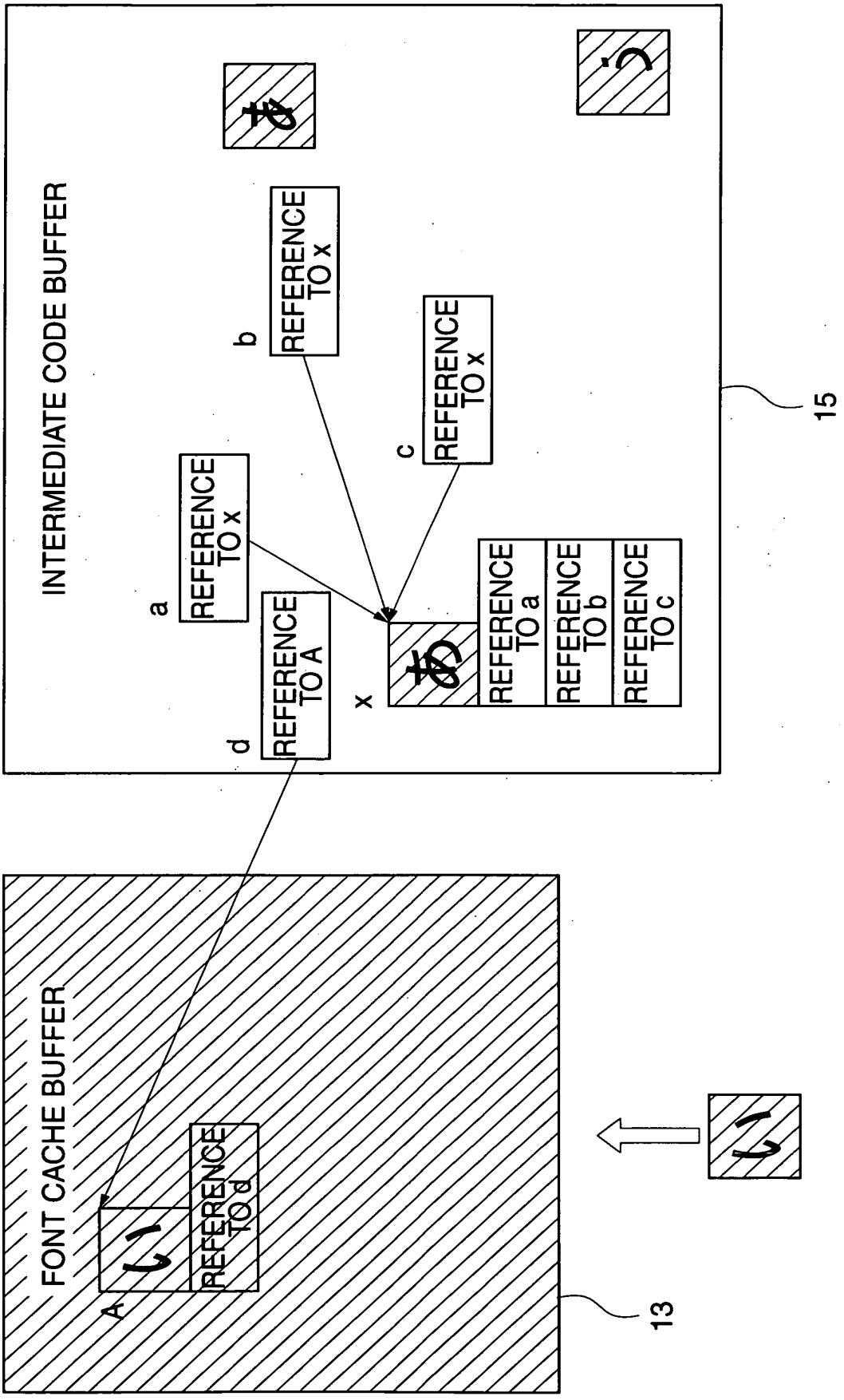

INTERMEDIATE CODE BUFFER
15
a
REFERENCE TO x
b
REFERENCE TO x
c
REFERENCE TO x
d
REFERENCE TO A
x
REFERENCE TO a
REFERENCE TO b
REFERENCE TO c
FONT CACHE BUFFER
13
A
REFERENCE TO d

FIG.6

FIG.7A

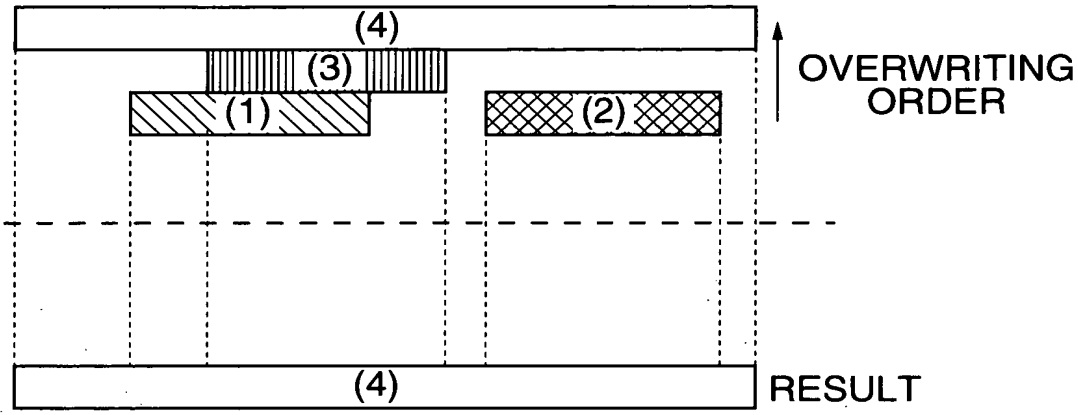


FIG.7B

FIG.8

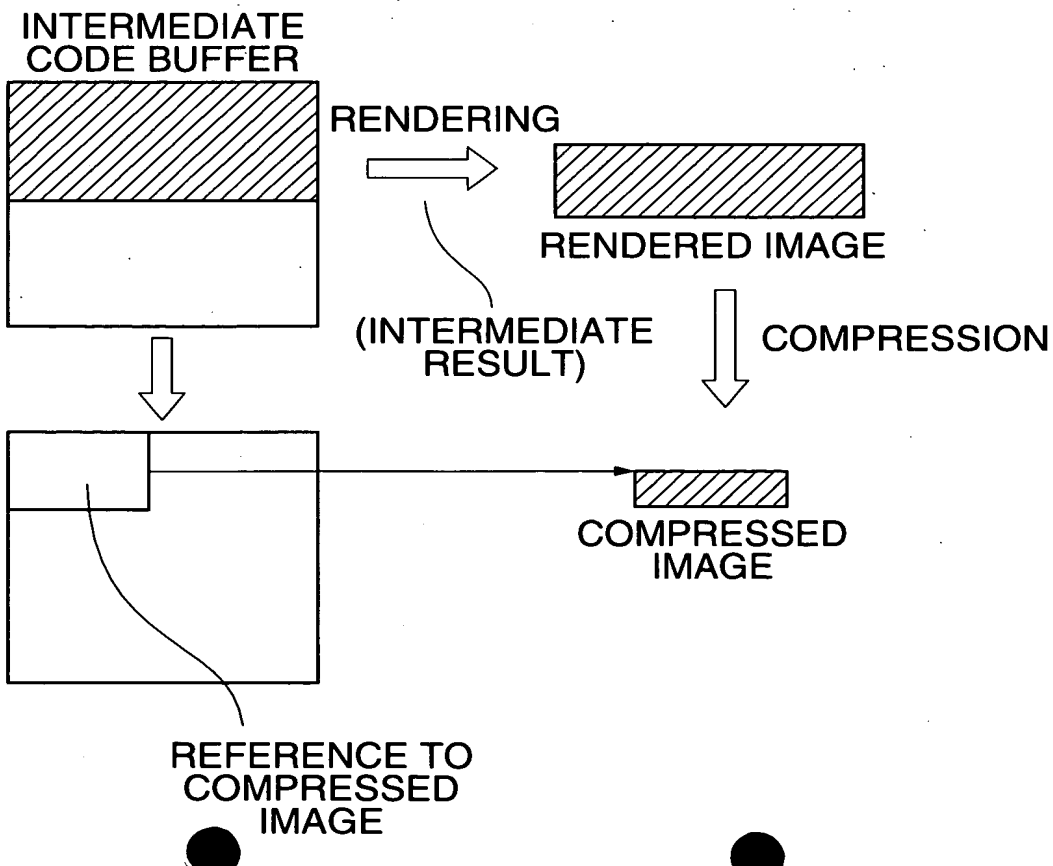
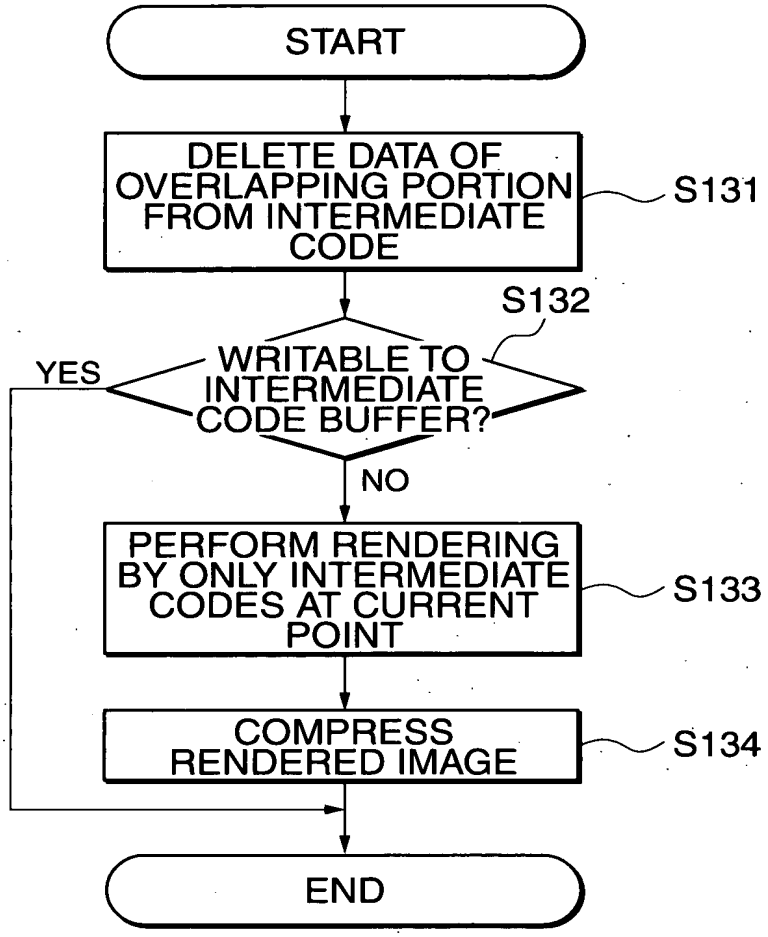


FIG.9


START
DELETE DATA OF OVERLAPPING PORTION FROM INTERMEDIATE CODE
S131
S132
WRITABLE TO INTERMEDIATE CODE BUFFER?
YES
NO
PERFORM RENDERING BY ONLY INTERMEDIATE CODES AT CURRENT POINT
S133
COMPRESS RENDERED IMAGE
S134
END

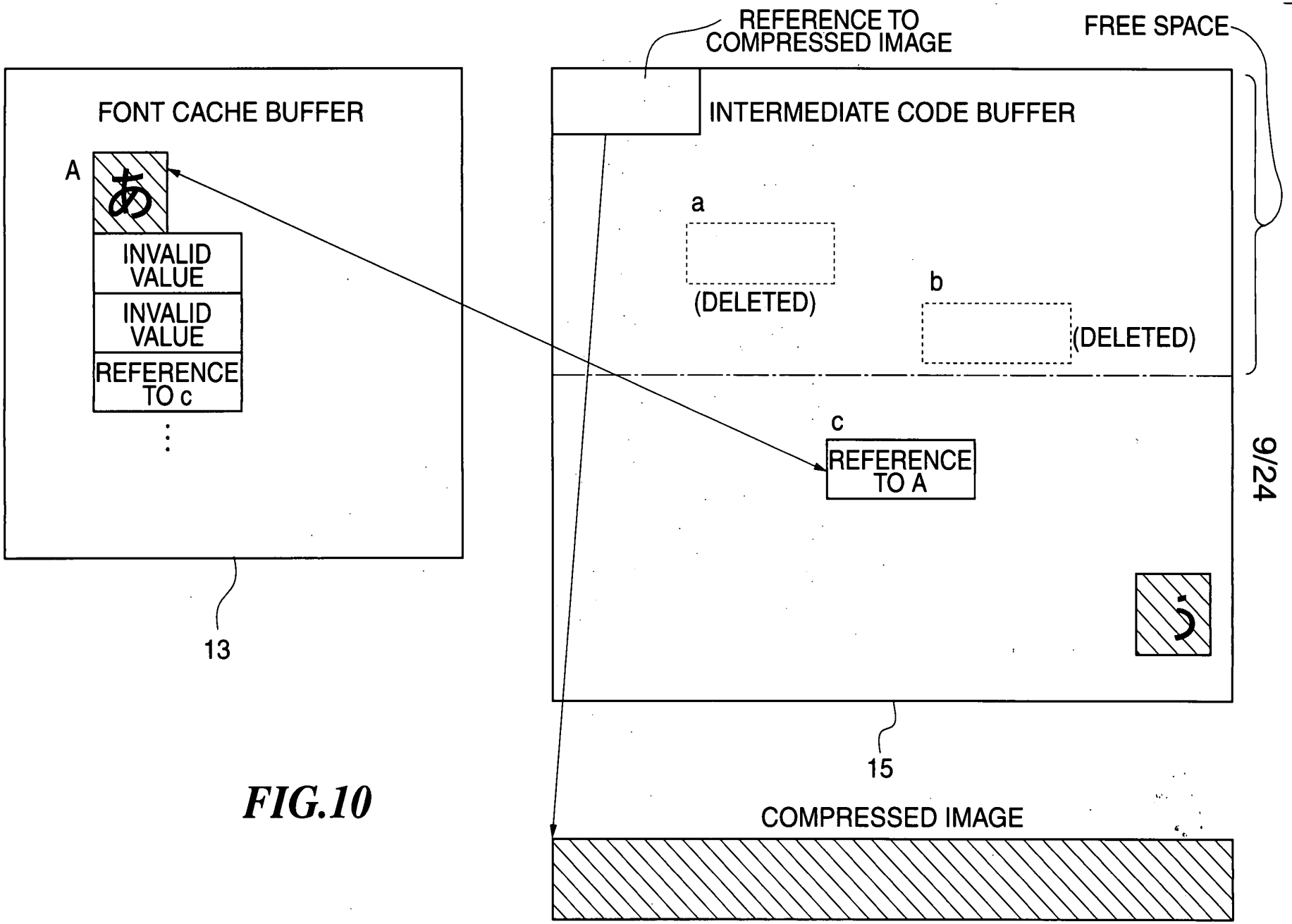

REFERENCE TO COMPRESSED IMAGE
FREE SPACE
FONT CACHE BUFFER
INTERMEDIATE CODE BUFFER
A
あ
INVALID VALUE
INVALID VALUE
REFERENCE TO c
a
(DELETED)
b
(DELETED)
c
REFERENCE TO A
う
13
15
COMPRESSED IMAGE

FIG.10

FIG.11

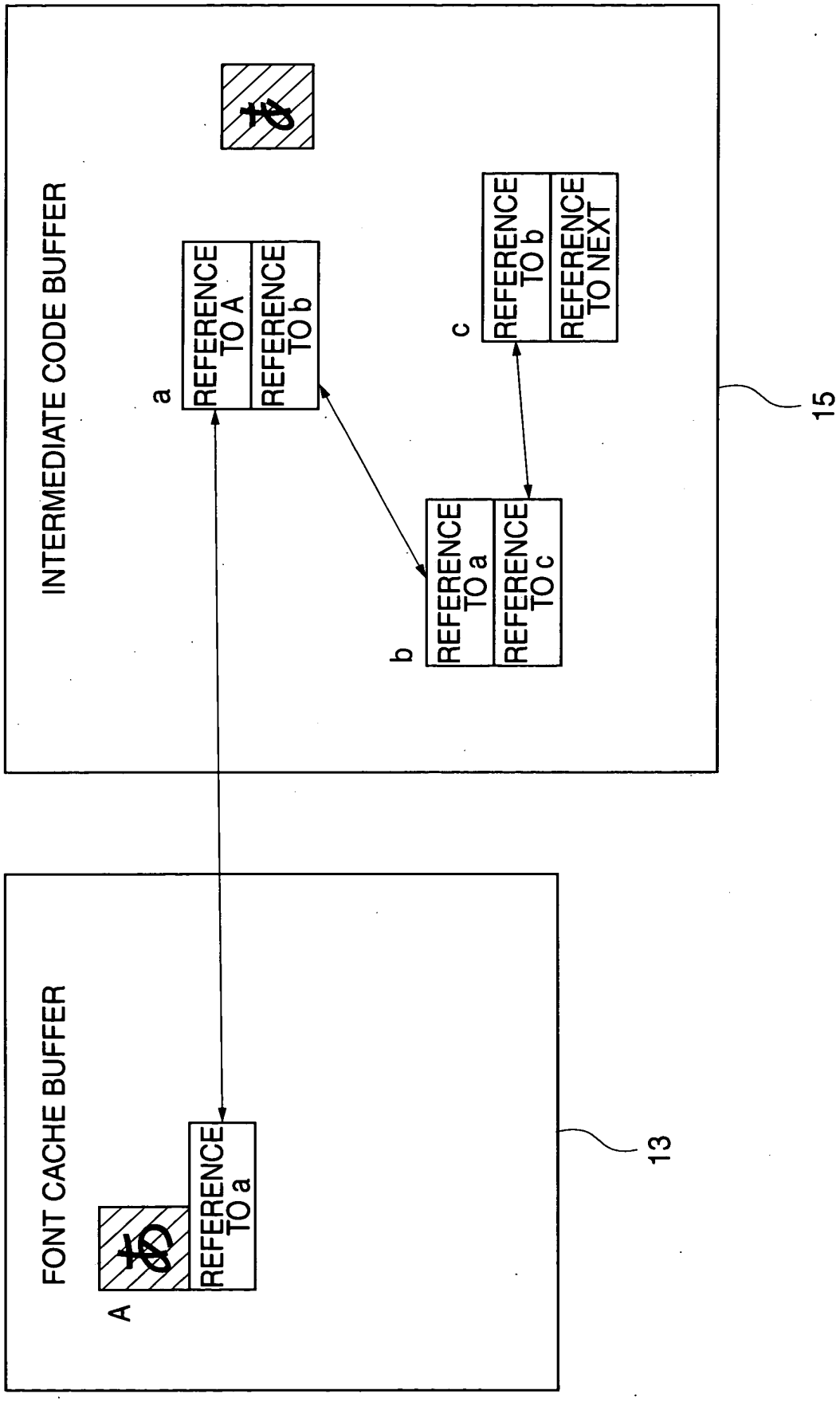
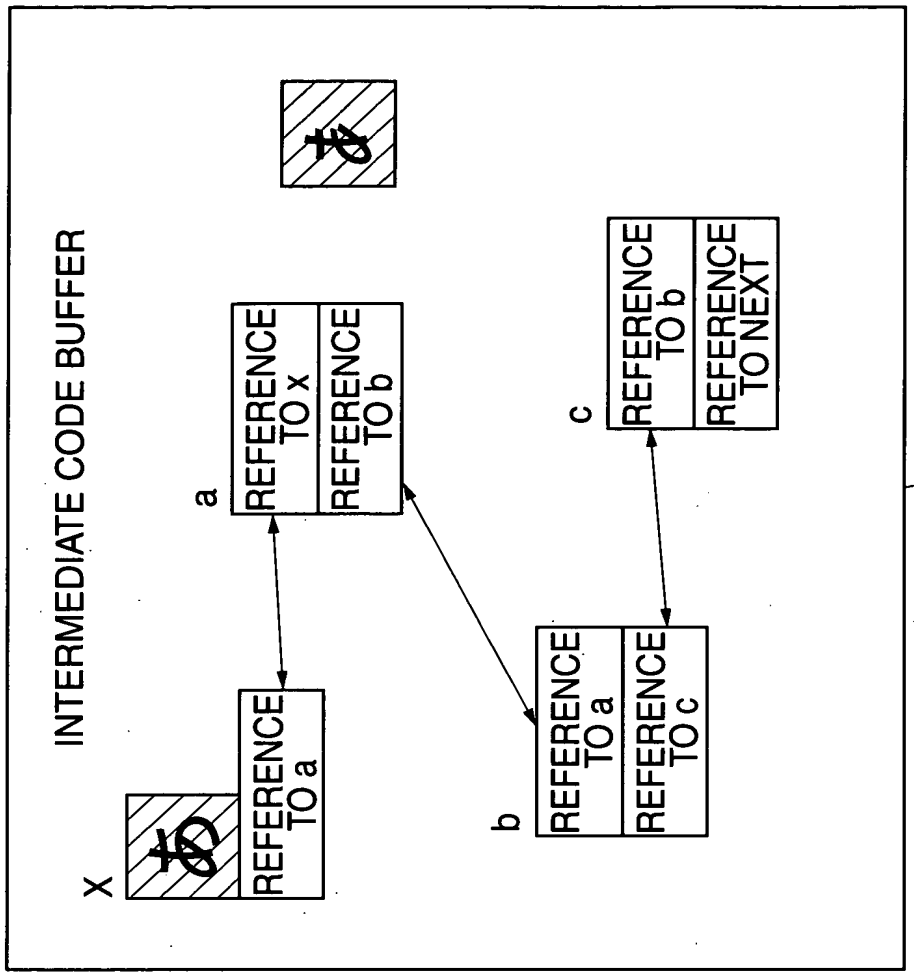
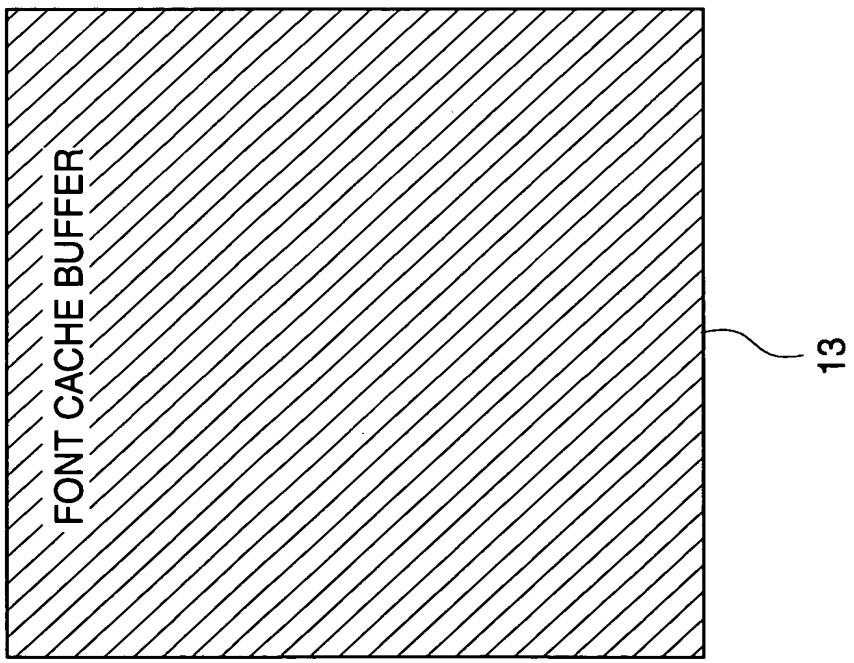

INTERMEDIATE CODE BUFFER
a
REFERENCE TO A
REFERENCE TO b
b
REFERENCE TO a
REFERENCE TO c
c
REFERENCE TO b
REFERENCE TO NEXT
15
FONT CACHE BUFFER
A
REFERENCE TO a
13

FIG.12


INTERMEDIATE CODE BUFFER
15
a
REFERENCE TO x
REFERENCE TO b
b
REFERENCE TO a
REFERENCE TO c
c
REFERENCE TO b
REFERENCE TO NEXT
X
REFERENCE TO a


FONT CACHE BUFFER
13

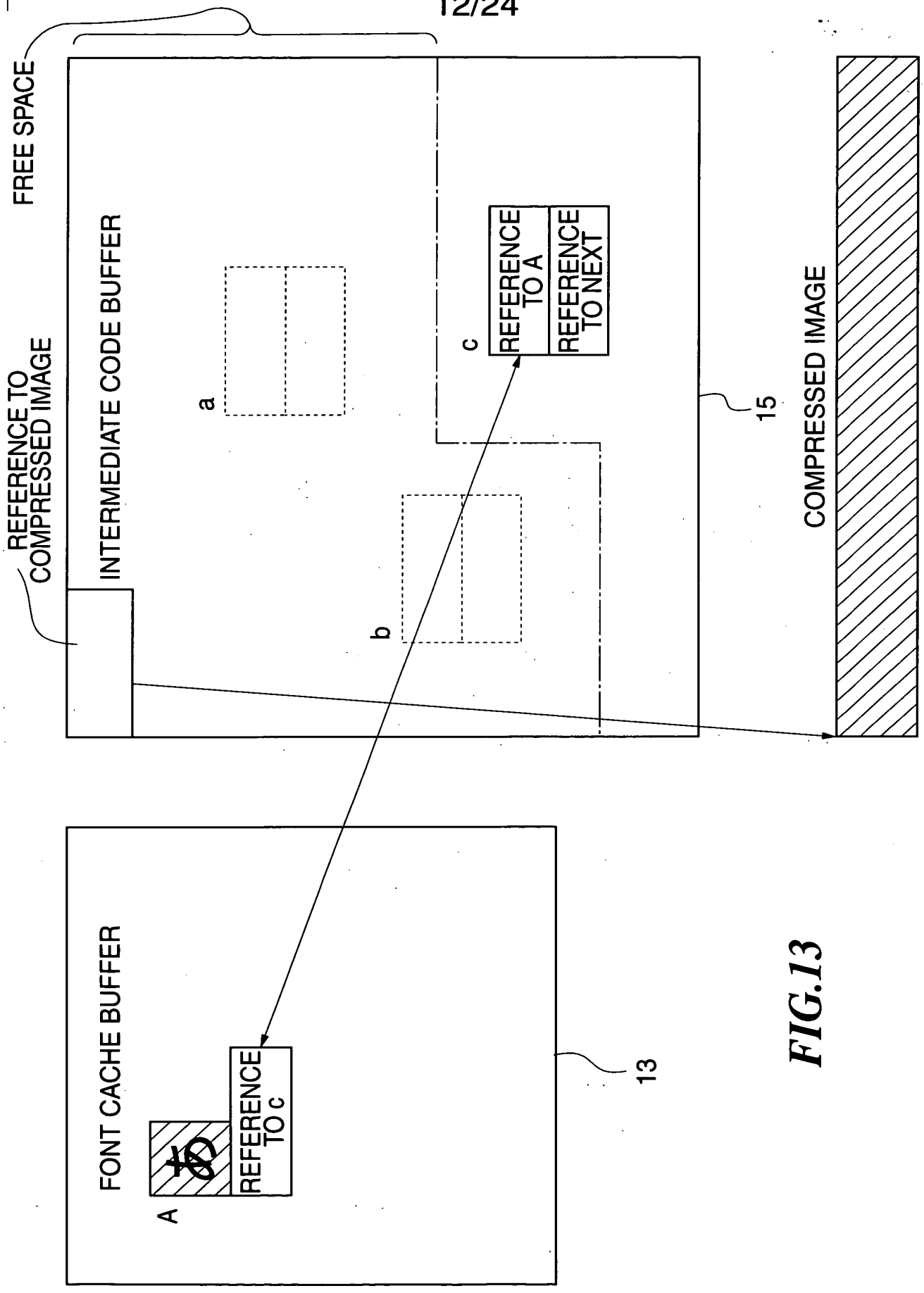

FREE SPACE
INTERMEDIATE CODE BUFFER
REFERENCE TO COMPRESSED IMAGE
a
b
c
REFERENCE TO A
REFERENCE TO NEXT
15
COMPRESSED IMAGE
FONT CACHE BUFFER
REFERENCE TO c
A
13

FIG.13

FIG.14

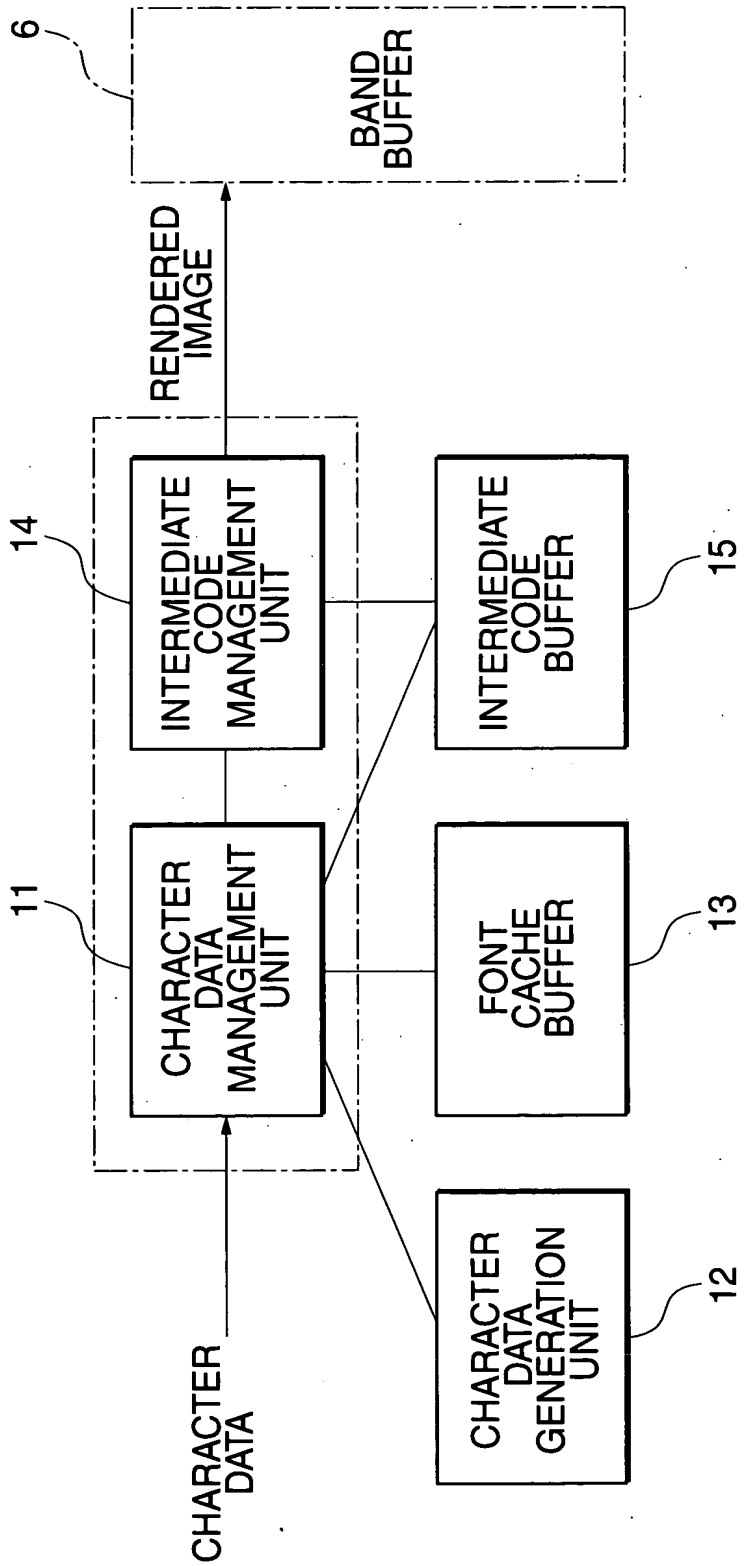

6
BAND BUFFER
RENDERED IMAGE
14
INTERMEDIATE CODE MANAGEMENT UNIT
15
INTERMEDIATE CODE BUFFER
11
CHARACTER DATA MANAGEMENT UNIT
13
FONT CACHE BUFFER
12
CHARACTER DATA GENERATION UNIT
CHARACTER DATA

FIG.15

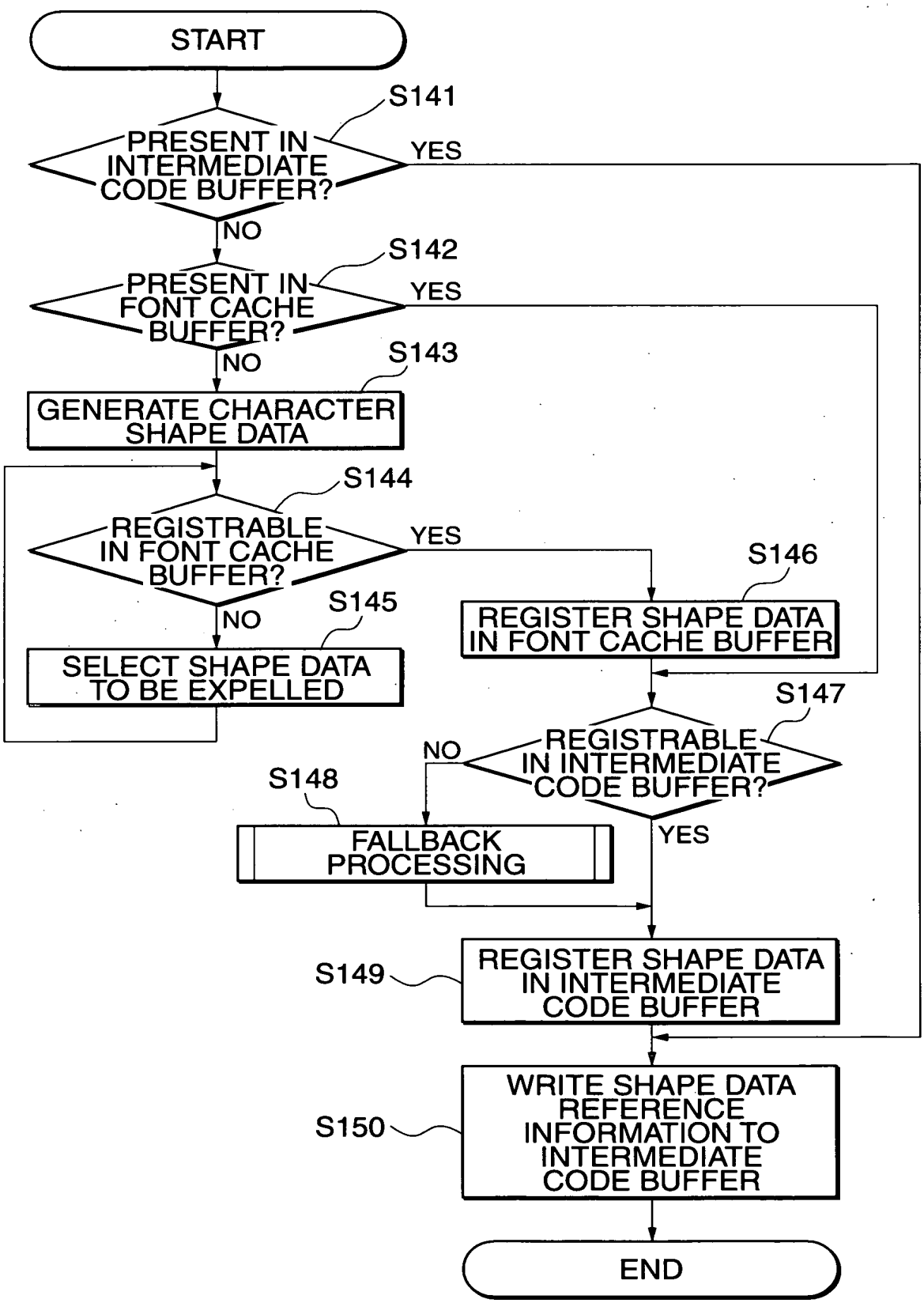

START
S141
PRESENT IN INTERMEDIATE CODE BUFFER?
YES
NO
S142
PRESENT IN FONT CACHE BUFFER?
YES
NO
S143
GENERATE CHARACTER SHAPE DATA
S144
REGISTRABLE IN FONT CACHE BUFFER?
YES
NO
S145
SELECT SHAPE DATA TO BE EXPELLED
S146
REGISTER SHAPE DATA IN FONT CACHE BUFFER
S147
REGISTRABLE IN INTERMEDIATE CODE BUFFER?
NO
YES
S148
FALLBACK PROCESSING
S149
REGISTER SHAPE DATA IN INTERMEDIATE CODE BUFFER
S150
WRITE SHAPE DATA REFERENCE INFORMATION TO INTERMEDIATE CODE BUFFER
END

FIG.16

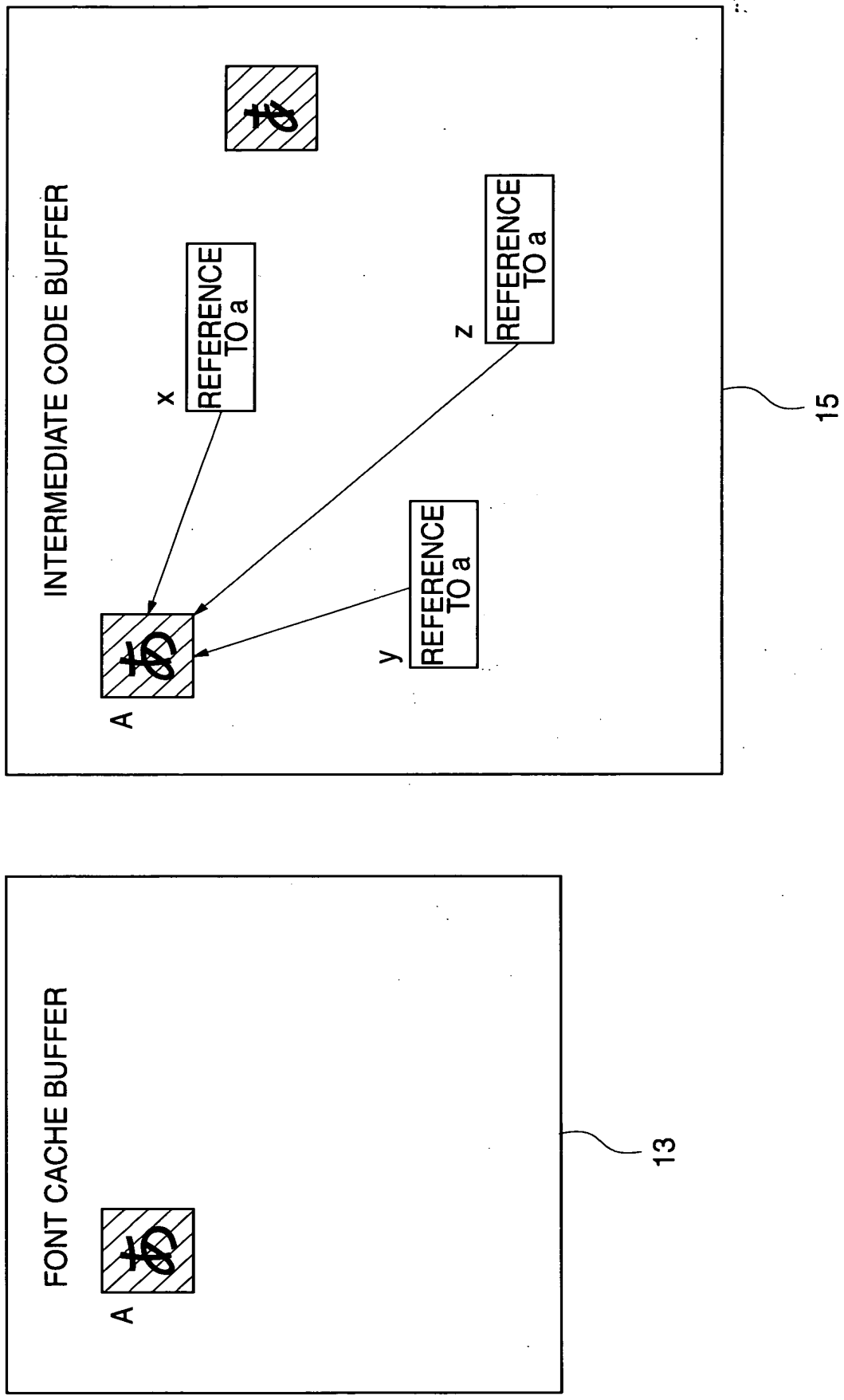
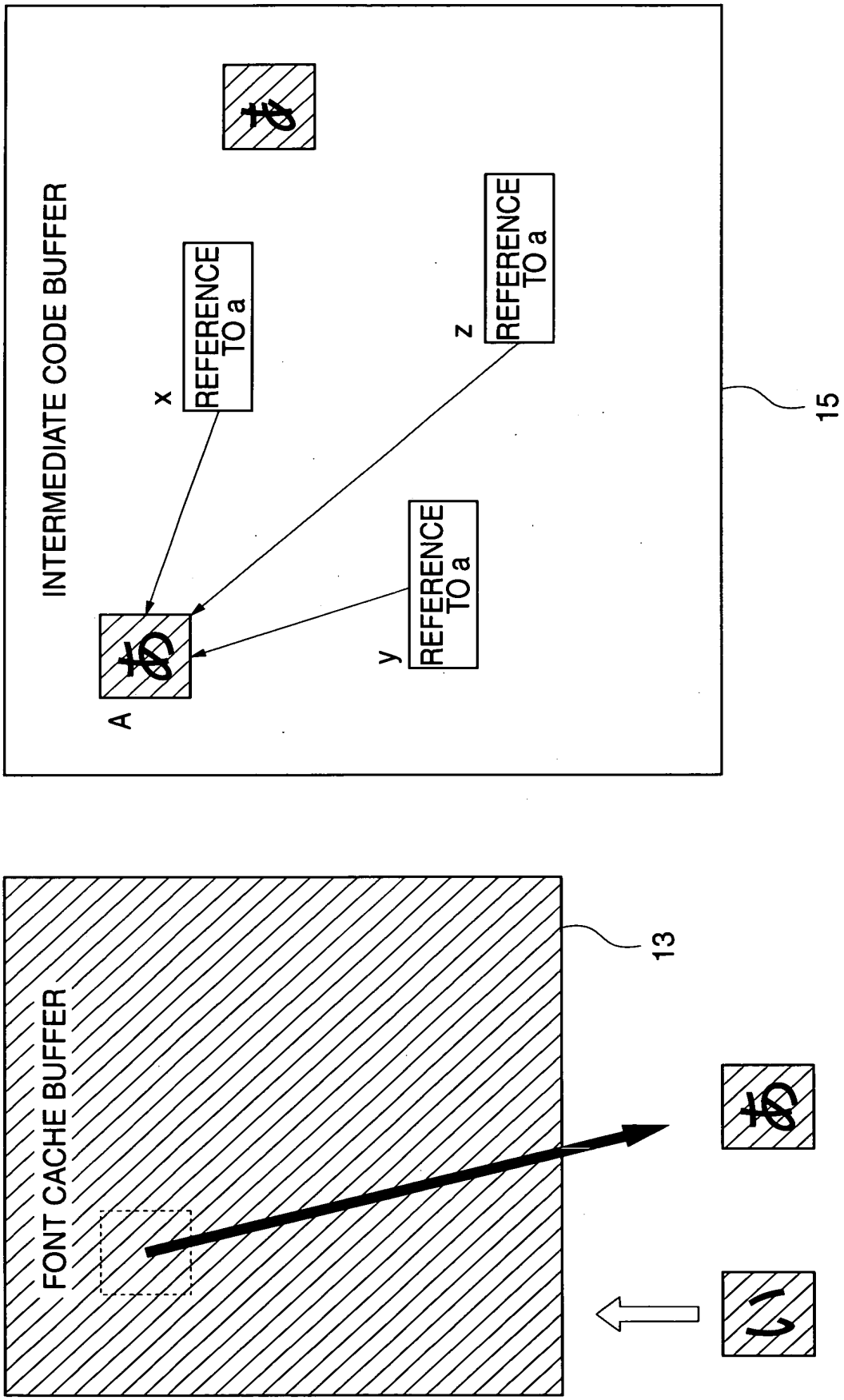

INTERMEDIATE CODE BUFFER
REFERENCE TO a
x
REFERENCE TO a
z
REFERENCE TO a
y
A
15
FONT CACHE BUFFER
A
13

FIG.17


INTERMEDIATE CODE BUFFER
REFERENCE TO a
x
REFERENCE TO a
z
REFERENCE TO a
y
A
15
FONT CACHE BUFFER
13

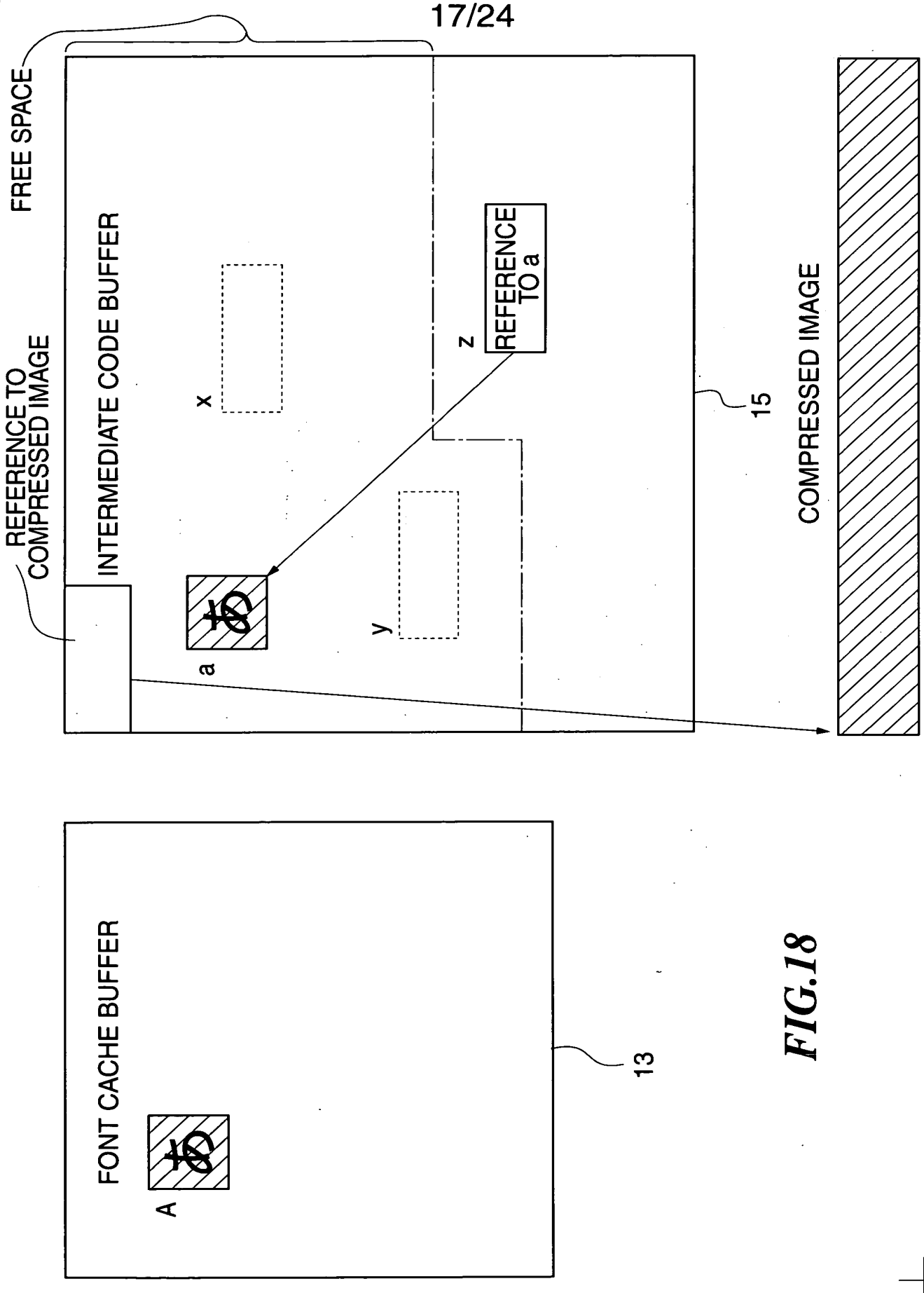

FREE SPACE
INTERMEDIATE CODE BUFFER
REFERENCE TO COMPRESSED IMAGE
x
z
REFERENCE TO a
y
a
15
COMPRESSED IMAGE
FONT CACHE BUFFER
A
13

FIG.18

FIG.19

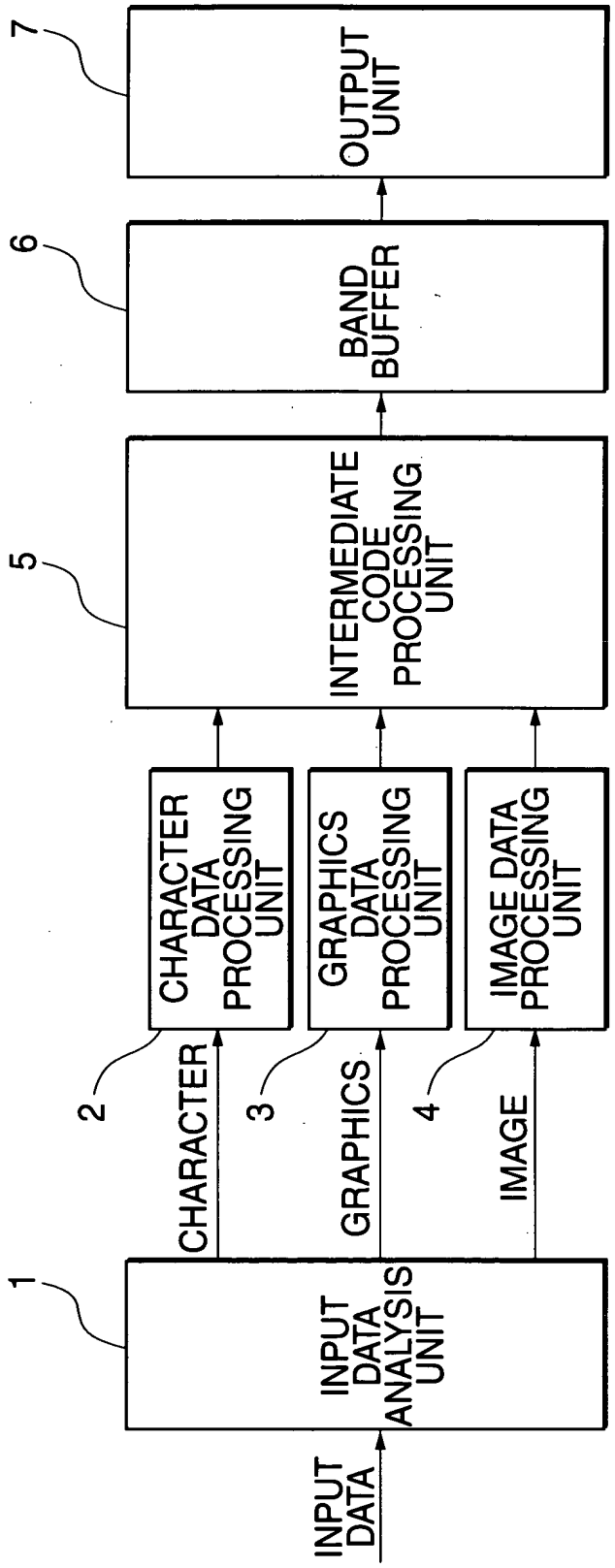

INPUT DATA
1
INPUT DATA ANALYSIS UNIT
CHARACTER
GRAPHICS
IMAGE
2
3
4
CHARACTER DATA PROCESSING UNIT
GRAPHICS DATA PROCESSING UNIT
IMAGE DATA PROCESSING UNIT
5
INTERMEDIATE CODE PROCESSING UNIT
6
BAND BUFFER
7
OUTPUT UNIT

FIG.20

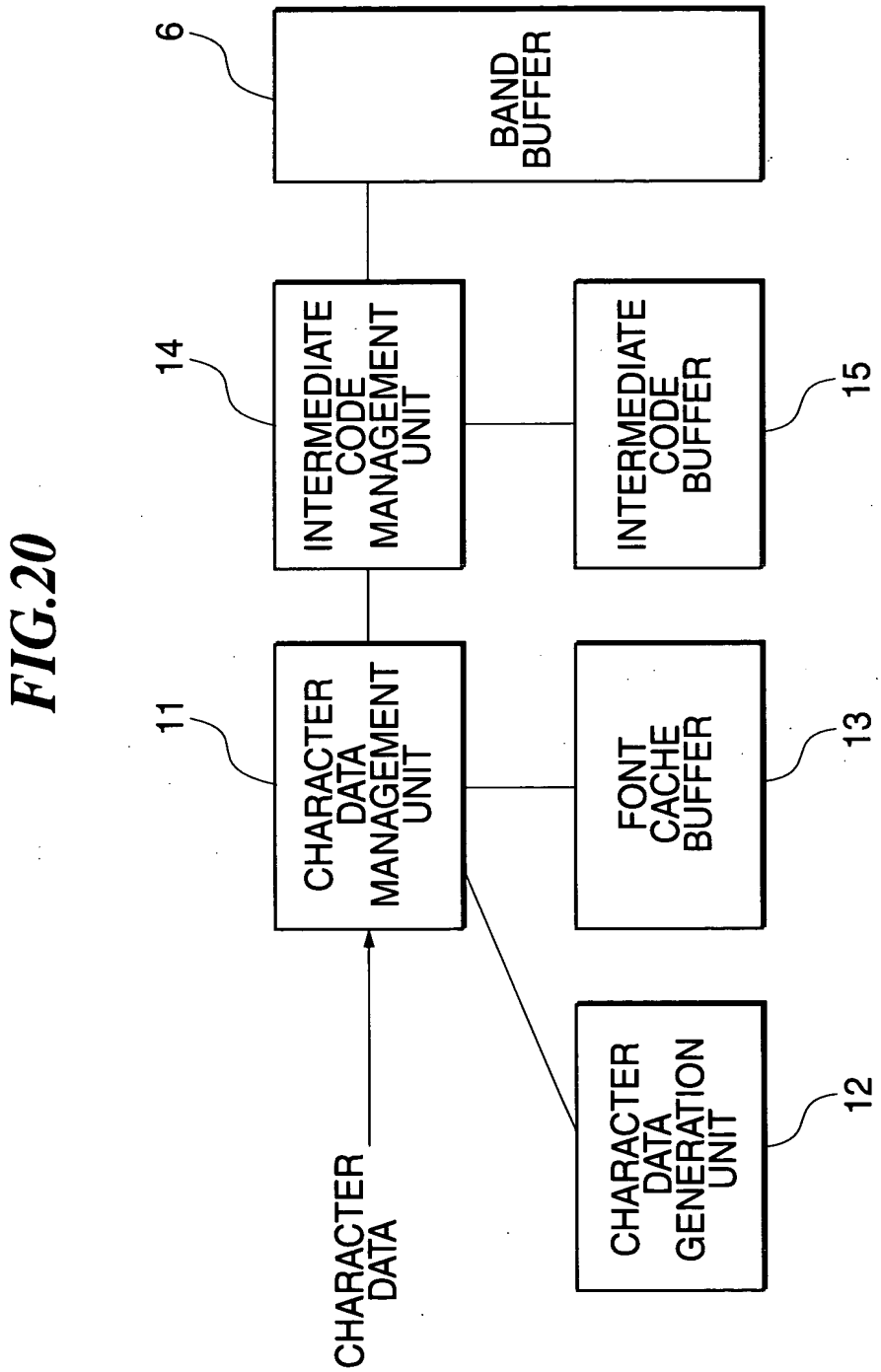

6
BAND BUFFER
14
INTERMEDIATE CODE MANAGEMENT UNIT
INTERMEDIATE CODE BUFFER
15
11
CHARACTER DATA MANAGEMENT UNIT
FONT CACHE BUFFER
13
CHARACTER DATA
CHARACTER DATA GENERATION UNIT
12

FIG.21

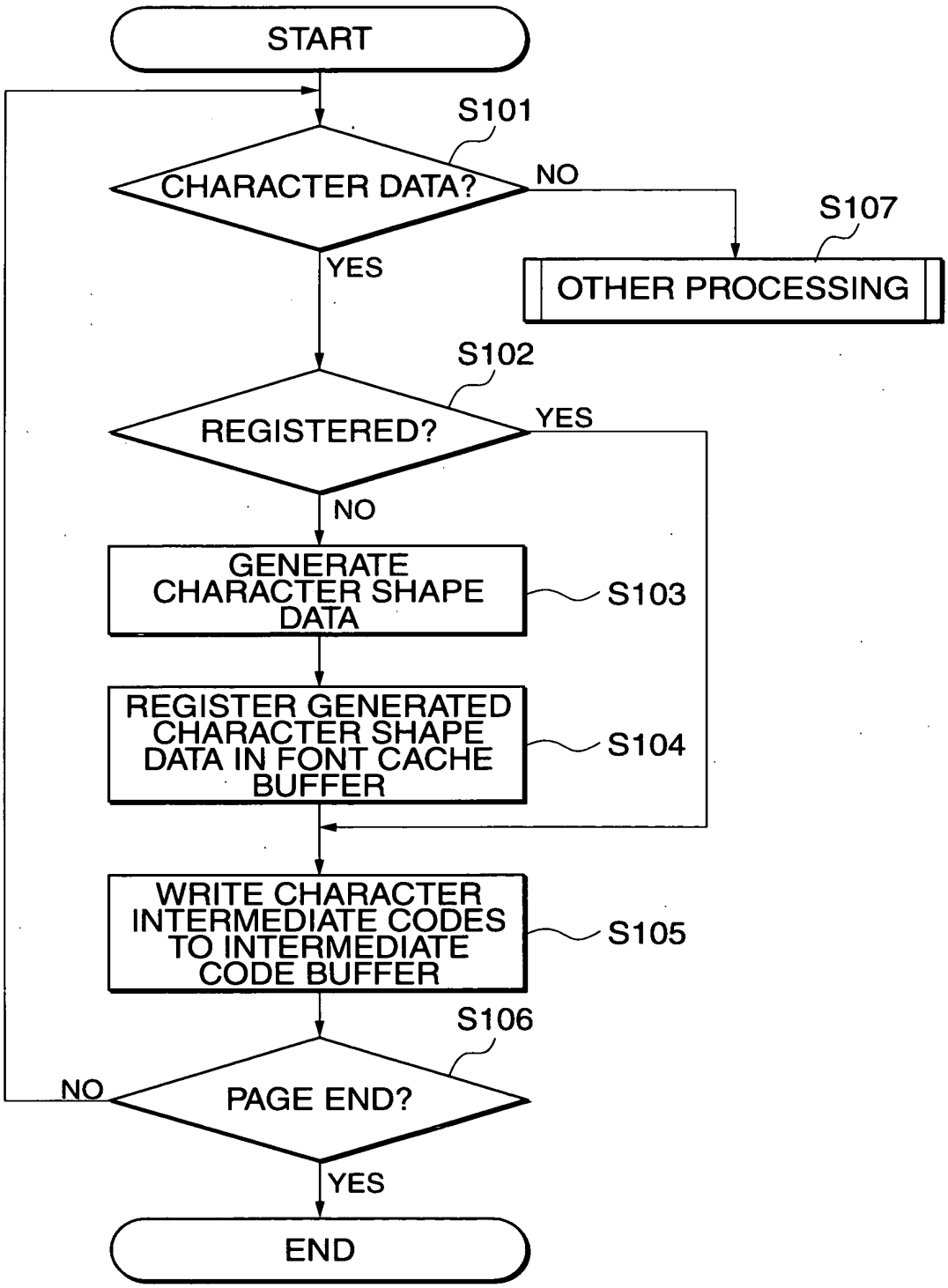
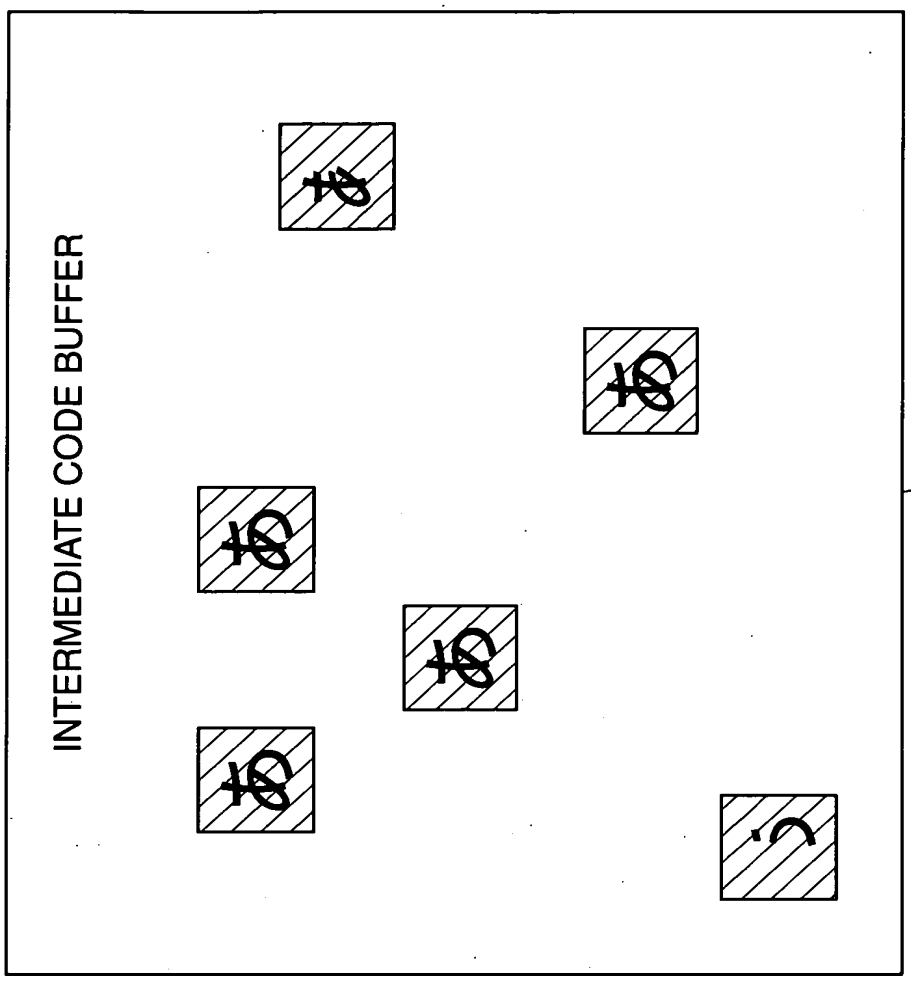

START
S101
CHARACTER DATA?
NO
S107
OTHER PROCESSING
YES
S102
REGISTERED?
YES
NO
GENERATE CHARACTER SHAPE DATA
S103
REGISTER GENERATED CHARACTER SHAPE DATA IN FONT CACHE BUFFER
S104
WRITE CHARACTER INTERMEDIATE CODES TO INTERMEDIATE CODE BUFFER
S105
S106
NO
PAGE END?
YES
END

FIG.22



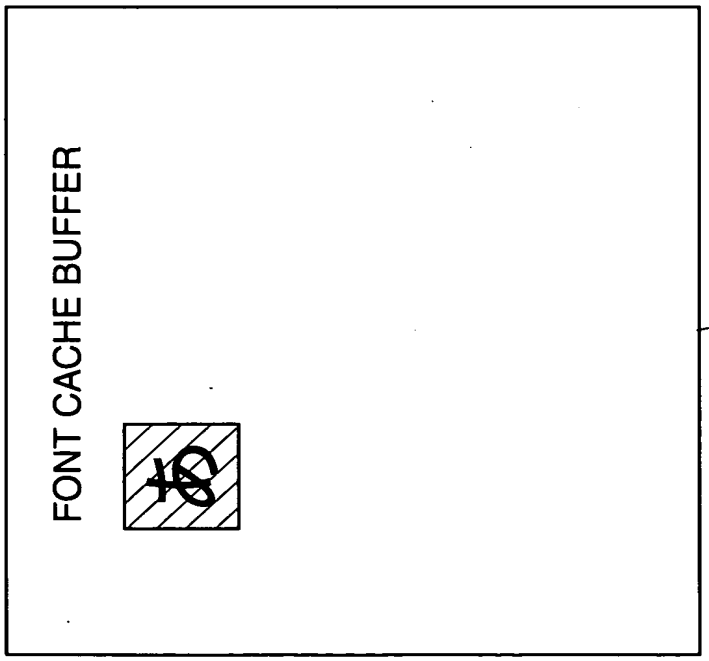


FIG.23

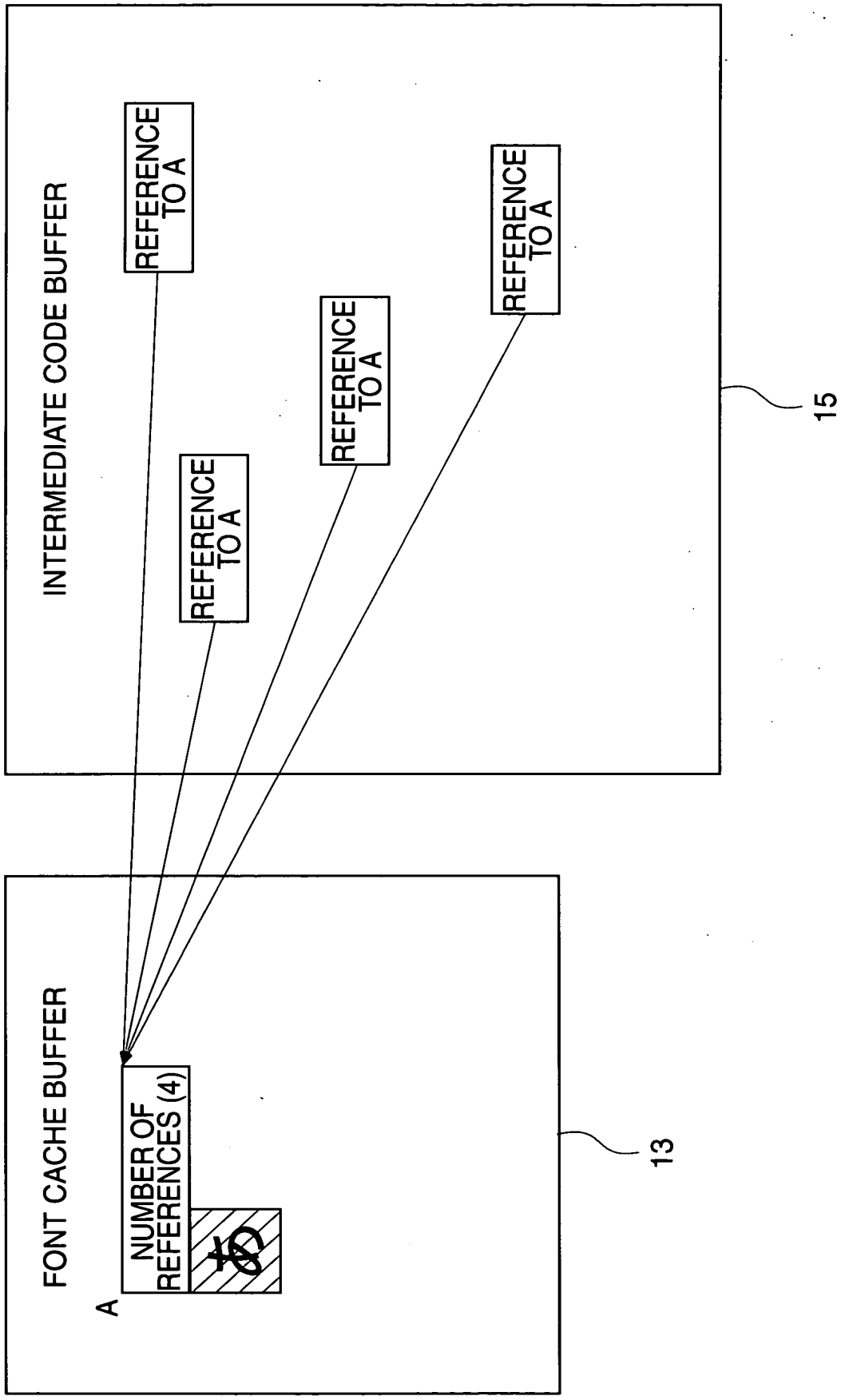

INTERMEDIATE CODE BUFFER
REFERENCE TO A
REFERENCE TO A
REFERENCE TO A
REFERENCE TO A
15
FONT CACHE BUFFER
A
NUMBER OF REFERENCES (4)
13

FIG.24

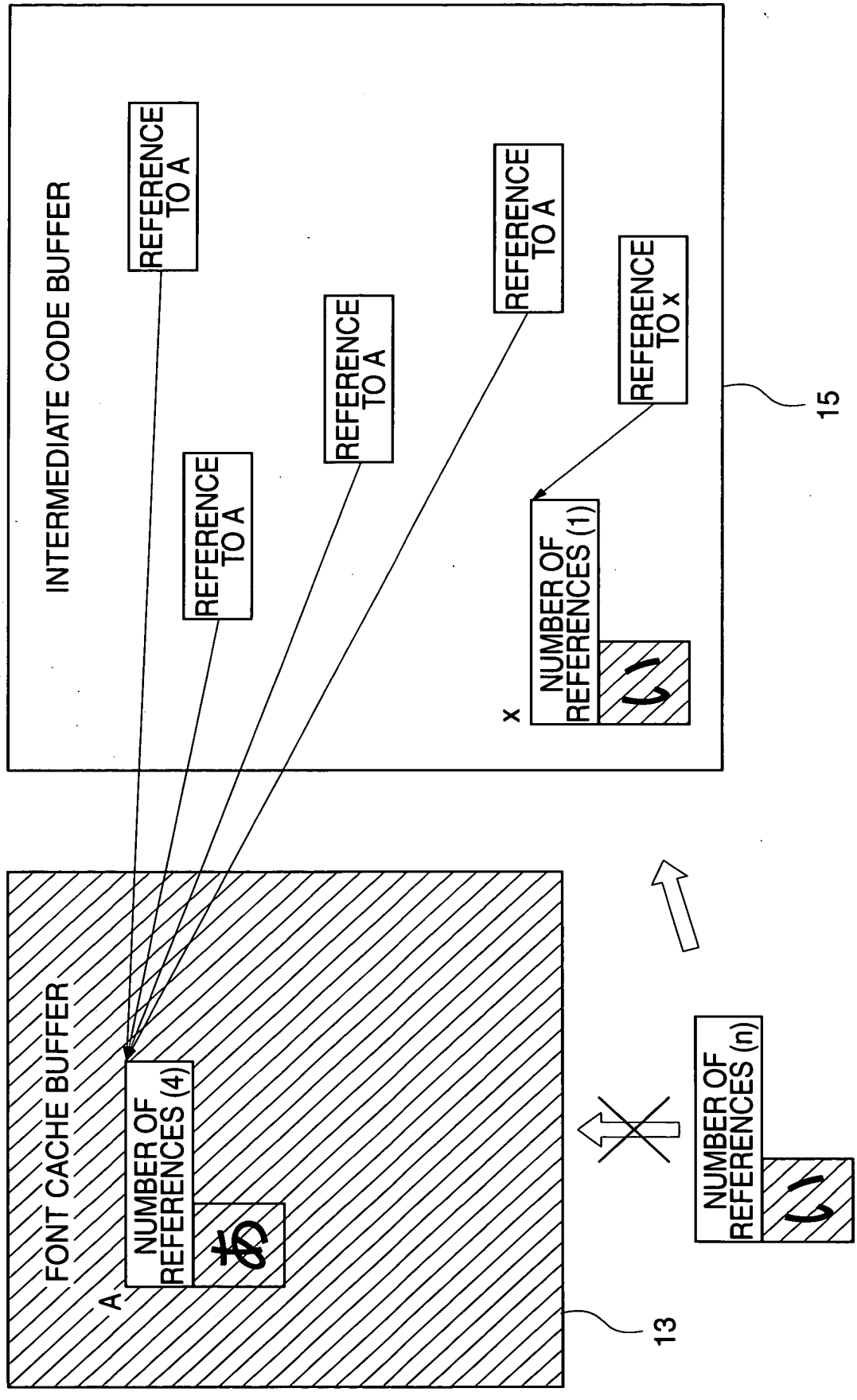
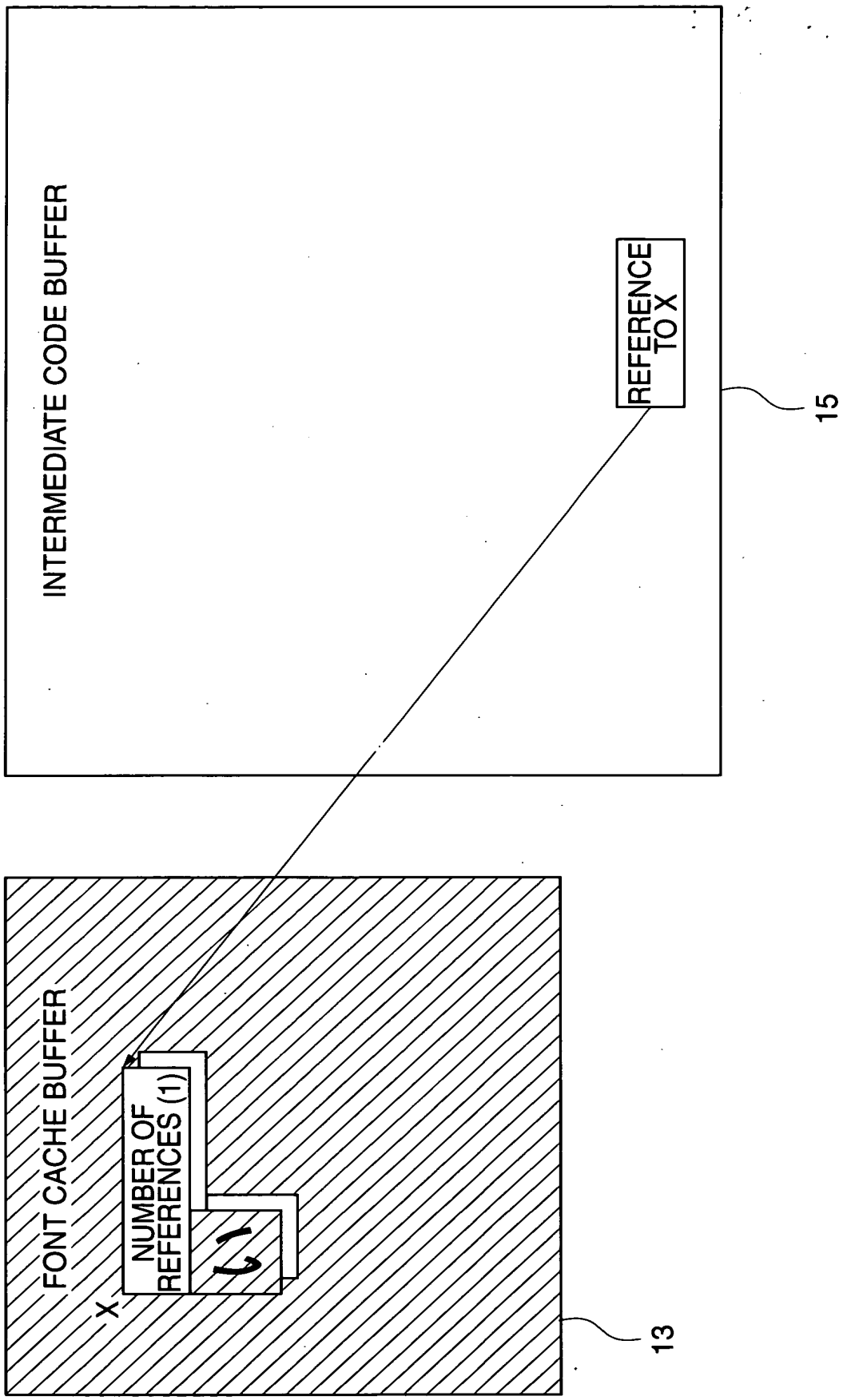

INTERMEDIATE CODE BUFFER
REFERENCE TO A
REFERENCE TO A
REFERENCE TO A
REFERENCE TO A
REFERENCE TO x
NUMBER OF REFERENCES (1)
x
15
FONT CACHE BUFFER
NUMBER OF REFERENCES (4)
A
13
NUMBER OF REFERENCES (n)

FIG.25


INTERMEDIATE CODE BUFFER
REFERENCE TO X
15
FONT CACHE BUFFER
NUMBER OF REFERENCES (1)
1
X
13